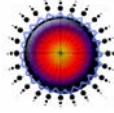


Harlem Children Society

'The Purpose of Souls is to Assist Each Other'



Harlem Children Society *Internship Program in Science, Medicine & Engineering* *Orientation 2007*

Weill Cornell Medical College, Uris Auditorium
1300 York Avenue, 68th Street Entrance between 68th & 69th Street on York Avenue
June 28th 2007

Harlem Children Society began yet another year and session in the quest of reaching out to some of the brightest students from the most abject circumstances. They share the common desire to pursue a serious education in science, engineering and mathematics, inspite of the tremendous hardships they and their families face on a day-to-day basis.

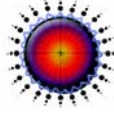
This year's commencement lay the groundwork for the HCS Class of 2007. The student body is comprised of over 250 high school interns from over 60 schools across the country and a hundred more globally, from over 15 countries in several continents. HCS especially draws from nations where there is a dire need and thirst for education – specifically in the sciences, including countries in Africa, Latin America and Asia.

The formal induction of the students took place in two separate locations simultaneously. The Uris auditorium at the Cornell Medical Center in New York City housed most of students. A hospital at the Hopi reservation in Polacca, Arizona also held a ceremony. Both were connected in real time via videoconference. More than 215 students were inducted in New York City, and another twelve in the Hopi reservation in Arizona. The event united every student, mentor, and family involved with Harlem Children Society, transcending cultures, time, and boundaries. It was a celebration of the young enthusiasts in their pursuit of science and culture.



Harlem Children Society

'The Purpose of Souls is to Assist Each Other'



Students also began their work in several other locations and sites, though not connected live on that day. Programs started in Princeton, Detroit, New Orleans, and several Native American reservations in Arizona, North Carolina, New Mexico, Ohio and elsewhere. This year there are students in Kenya, Tanzania, Ethiopia, Algeria, Columbia, India and a gradually expanding community in other countries.

In New York, students preparing to enter the Harlem Children Society (HCS) Summer Program filed into Cornell Medical Research Center two hours before the scheduled orientation, eager to set the seventh summer of medical training off right. After taking much time to complete menial registration activities, including filling out questionnaires and having their photos taken, the students, both new and experienced, entered Uris Auditorium. As three o'clock approached, the students filled up most of the 250 seats in the auditorium. Some were excited to see friends from the previous summer. Others looked nervous to be at their first day with HCS. Once the presentation was ready to begin, the high school interns quieted down, and Dr. Sat Bhattacharya, HCS's founder and CEO, began his speech.

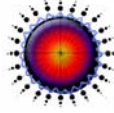
He gave recognition to each one of the kids personally. Justin Moore and Sheveen Greene, staff interns at HCS, read all their names out loud. (Sheveen is a product of HCS herself. She worked with Dr. Sat in his laboratory from 2001 to 2003. She graduated from Swarthmore this year, and has joined HCS to help other students peruse their dreams). As the names were announced, each intern stood with pride and honor. Dr. Anna Lewis read the HCS inductees at the Hopi Medical Center in Arizona.

After running through various formalities, Dr. Sat focused on the highlight of his talk: how HCS has incorporated GoogleEarth to connect different individuals to several cities across the world. Clicking on the pictures of various students and their families is intended to take one to specific homelands, neighborhoods and cultures within seconds. For instance, selecting Ka Lai Poon's picture will take you to her neighborhood in Manhattan. From there you will be connected to her mentor's laboratory at the Albert Einstein School of Medicine in Bronx, NY, and to her home country in Yugoslavia. You can see interviews with her and her family, as well as a map of her birthplace in Hong Kong. The same can be said for Christian Garcia and two other students, whose families come from all over the globe. This is a representation of Dr. Sat's effort to unite the world as closely as he can, shrinking the globe down to the size of a computer screen, and prove that education is a global effort.



Harlem Children Society

'The Purpose of Souls is to Assist Each Other'



The Orientation continued with the idea of interconnectedness in mind. First, over two hundred students in the audience, from a large projection screen, saw a live feed of students at a Hopi Reservation medical center in Arizona, also participating in HCS in the Painted Desert of the Southwest. They were introduced to a dozen interns there, and waved hello. It was a touching moment in which students separated by a continent, but united in a common effort, could communicate visually with each other, and see the growth of HCS for themselves.

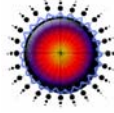
After the feed was cut, six New York students began presenting their projects from last year. The experiments covered an array of scientific fields in-depth, and with inspiring sophistication. The following is a short description of each of the presentations:

Nertilla Ujkaj was born in Albania and came to New York after intense political turmoil and violence began in her country following the end of communism in the early nineties. On Thursday, she presented her project on her research of Celiac Disease (CD). This is an illness that affects the small bowel, causing diarrhea and sometimes death in small children. Celiac Disease is especially prevalent in Southeast Europe, including Albania, and parts of the Persian Gulf, which could be why Nertilla chose this particular illness. Nertilla attempted to measure the level of cytokines, which are similar to hormones, in patients with CD, and how sugars affect these levels. To see these differences, she measured the levels of pro-inflammatory cytokines in healthy patients, those with CD on a gluten-free diet, those with CD on a normal diet, and refractory disease patients. She felt that the cytokines would be higher in the latter two categories of patients. However, through her experiments of serum samples of different patients, Nertilla discovered that her hypothesis was wrong. Although it is recommended that CD patients maintain a gluten-free diet throughout their lives, she found that pro-inflammatory cytokine levels were accelerated in patients on both kinds of diets. She also writes in her report that she will continue with her biopsies, or examinations of cells and tissues, looking for more information.



Harlem Children Society

'The Purpose of Souls is to Assist Each Other'



Alberto del Rosario did his presentation using similar materials. He injected mice with cancerous tumors, and explained how cytokines help T-cells, which are white blood cells that are key to producing immunities, in killing cancerous cells. He injected luciferin intravenously into the mice to illuminate the luciferase, which will aid in tracking down the desired T-cells. He then extracted the T-cells, and altered these cells so that the mice could more easily kill the cancerous cells. After the summer is up, his mentor will inject the mice with these altered cells, and is waiting to see if they kill off the cancer cells.

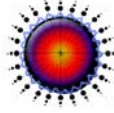
Christian Garcia was born in New York, and grew up in Washington Heights. His mother is Dominican, and his father is Colombian. Louis Shackelford was also born in New York and grew up in Washington Heights with his older sister and younger brother. They both presented the work they did on hybrid rocketry at the Kennedy Space Center in Florida. First, Louis presented solid fuel rockets, the oldest kind of rockets. Their first-known use was in 200 AD in China, and they have been utilized ever since. Their advantages include their simplicity, their relative inexpensiveness, and their easiness in launching. However, they cannot be stopped mid-launch (or throttled), and are inefficient in burning fuel, as a significant portion of the fuel goes unused. Liquid fuel rockets, on the other hand, can be throttled, and therefore use fuel more efficiently. It also has a much higher propulsion power. However, they are much more complicated, and require an extensive list of components. Therefore, it is more expensive, and is much heavier. Christian then stepped up to the podium, and presented the better alternative to both of these rockets: hybrid rockets. They combine the advantages of both solid and liquid fuel power. They are lightweight and cheap, but can be throttled and refueled. These are the kinds of rockets currently used for space shuttles.

With their research, Christian and Louis attempted to build their own small hybrid rocket, using a variety of materials, and Everclear, a highly concentrated alcohol, as fuel. However, despite correcting a variety of problems, and attempting several launches, their rocket did not launch successfully. They attributed this to a malfunctioning thermal valve, a main part of a rocket's engine. They concluded by explaining that hybrid rockets are the way of the immediate future. Plasma, which makes up 99% of the universe, is the engine fuel of the more distant future, and will soon redefine the space technology and astrophysics.



Harlem Children Society

'The Purpose of Souls is to Assist Each Other'



New York student, Princess Kara Parker-Smith did her project on the alpha-agglutinin protein. She attempted to do enough research on this protein so that a drug could be made to kill it, which would prevent the harmful fungus *Candida albicans* from growing. Her presentation was short, as she has not finished her research yet. But, she did conclude that gene sequences in the harmful substance were key to the development of the proteins, which was extremely beneficial in her understanding of the fungus.

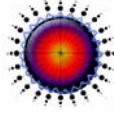
Finally, Natasha Tonge presented a relatively simple but important project, which explores the method of finding amino proteins in kidneys. Discussing the anatomy of the kidney, she demonstrated how she took a small kidney tissue sample and embedded it in paraffin wax to examine it. To see the proteins, she stained the tissue, which lights up the proteins. This process is called immunohistochemistry. This same process can be used to find abnormal tissue, which could be important to treating kidney ailments.

When the students had exited the stage, Anne Marie Cunningham, the producer of Science Friday on National Public Radio, took the stage. She mentors several students from the Harlem Children Society, and accepted Dr. Sat's invitation to speak at the orientation. She stressed the importance of science writing, which is a field that is becoming increasingly popular for kids at HCS. She understands how vital good writing is in all scientific fields, including research papers as well as scientific journalism. As a member of the media, Ms. Cunningham understands the value of how work is presented to the public. But, despite her insistence on quality writing, she did acknowledge the wave of popularity of the Internet. Many children today obtain most of their information online. Therefore, she insisted, kids like those working at the Harlem Children Society must make their research available electronically. She suggested that they film their experiments, and post them on sites such as YouTube. It is key that information be spread in a way that is most accessible to the public, especially young people, who need to be inspired to seek careers in science and technology.



Harlem Children Society

'The Purpose of Souls is to Assist Each Other'



After thoughtful and motivating words from older professionals and young learners, Art Bailey and Steve Gluzband, a trumpet and piano duo, concluded the orientation, giving some aural relaxation to the serious speeches and visual diagrams that preceded it. They gave a pleasing jazz performance, combining the styles of Dizzie Gillespie and Oscar Peterson into a few wonderful pieces.

The event ended with a reception outside the auditorium. A wonderful array of home cooked cookies of different kinds, tea, coffee and ice tea were displayed amid beautiful bouquets of flowers. The students had the opportunity to mingle with everyone involved with Harlem Children Society.

The students seemed ready for an intense but enjoyable period of research, as well as companionship with their peers. They will be pursuing research with some of the world's leading researchers in over 60 institutions nationally and internationally, attending lectures, giving talks, and presenting their research at various science symposia, conferences and congresses. They will also have a first-hand experience at sharing their research with the public in the annual International Harlem Science Street fair and festival, conducted in several cities across the continent.

The number of total students has more than doubled since last year, and the expectations from Dr. Sat are as high as ever. He has laid out vigorous course requirements, but as the students took meticulous notes throughout the first day of Harlem Children Society's seventh year, they seemed ready for the challenge, and set to make their own mark on the world.

